

Alvarado-Niles Rd ■ Traffic Signal Timing Project

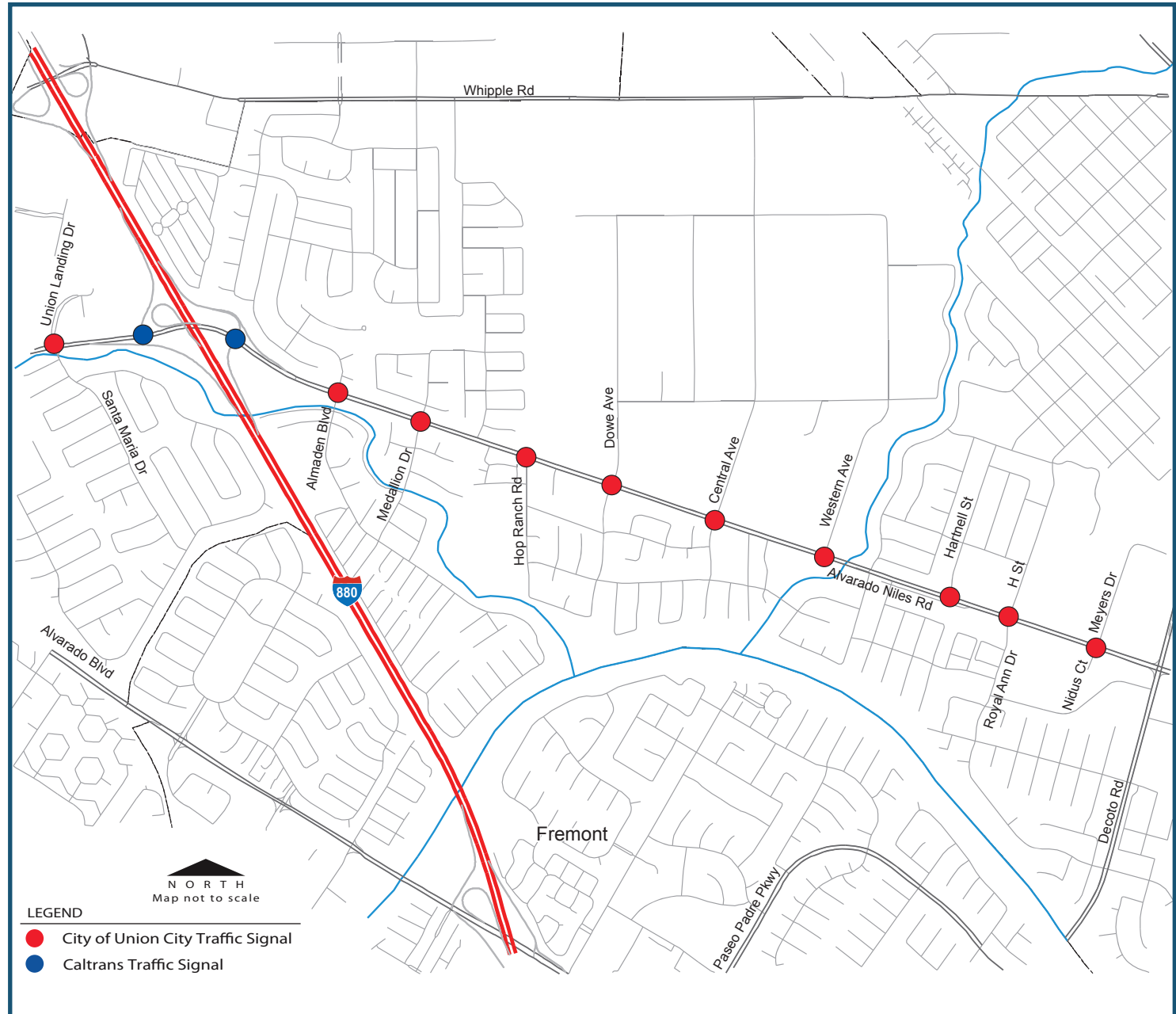
City of Union City | Caltrans | Metropolitan Transportation Commission

PROJECT OVERVIEW

The City of Union City, in conjunction with Caltrans, received a Program for Arterial System Synchronization (PASS) grant from the Metropolitan Transportation Commission to conduct a signal timing study for 12 signals along Alvarado-Niles Rd. In addition, the project included development and implementation of school peak AM and PM coordination plans to mitigate congestion near schools along the corridor.

The goal of this project was to facilitate traffic progression along the corridor; and to update the signal timing plans to achieve operational efficiency of the traffic signals. Attaining this goal is expected to reduce traffic congestion, reduce traffic delays, reduce the emission of harmful greenhouse gases, reduce travel time along the study corridor, and improve traffic safety.

This PASS project involved the completion of the following major tasks: collecting traffic volumes and turning movement counts -- including bike and pedestrian counts -- at all project intersections; analyzing this traffic data including collision data to develop optimized signal timing plans; implementing and fine-tuning the plans in the field; and conducting travel time surveys to analyze the performance of the new timing plans.



SIGNAL INTERCONNECT ACROSS I-880

The PASS project also provided funding to install approx. 4,500 feet of signal Interconnect (SIC) to connect the intersections of Alvarado-Niles Rd/Almaden Blvd and Alvarado-Nile Rd/Union Landing Dr and provide direct communication to the City Hall TMC. The city used an existing 3" conduit across the I-880 interchange and installed the cable with the help of city's contractor. With the closure of this SIC gap, intersections to the west of I-880 are directly communicating to the TMC, and receiving continuous time updates from the new GPS device installed at the TMC.

BENEFITS TO VARIOUS MODES



BENEFITS TO BICYCLISTS: For improved safety, the minimum green intervals were reviewed for bicyclists on the corridor. Changes to minimum green intervals were made at all project intersections.



BENEFITS TO PEDESTRIANS: For improved safety, the pedestrian intervals were reviewed and increased at most intersections based on current 2012 California MUTCD standards. Changes to pedestrian timing were made at 11 project intersections.



BENEFITS TO TRANSIT: To assess the impacts on transit, travel time runs on transit vehicles were conducted both before and after the new timings were implemented. The evaluation results, as shown in the table to the right, demonstrate that the project resulted in some speed and travel time savings.

Project Costs

Consultant Costs (Basic Services/Plans, Transit Travel Time Runs)	\$33,740
Other Project Costs (GPS Clocks, School Peak Timing, etc.)	\$8,645
Agency Staff Costs (Estimate)	\$7,150
Total Costs	\$49,535

Project Benefits

Measures	Annual Average		Lifetime (5 Years)	
	Savings	Monetized Savings	Savings	Monetized Savings
Travel Time Savings	31,260 hrs.	\$596,679	156,300 hrs.	\$2,983,394
Fuel Consumption Savings	65,915 gal.	\$264,898	329,577 gal.	\$1,324,488
ROG Emissions Reduction	0.37 tons	\$465	1.85 tons	\$2,325
NOx Emissions Reduction	0.42 tons	\$7,555	2.10 tons	\$37,775
PM10 Emissions Reduction	0.08 tons	\$11,082	0.38 tons	\$55,409
CO Emissions Reduction	3.07 tons	\$238	15.37 tons	\$1,188
Total Lifetime Benefits				\$4,404,580
Transit Travel Time Savings	399 hrs.	\$7,616	1,995 hrs.	\$38,080
Total Lifetime Benefits with Transit				\$4,442,660

Overall Project Benefits

	Auto	Transit
Average Decrease in Travel Time	20%	3%
Average Speed Increase	26%	5%
Average Fuel Savings	17%	N/A
Average Reduction in Signal Delay	48%	N/A
Average Reduction in Number of Stops	50%	N/A

Overall Benefit-Cost Ratio

90:1



PROJECT BENEFITS SUMMARY



Average Reduction in Auto Signal Delay: 48%

Average Reduction in Number of Stops: 50%

Auto Fuel Consumption Savings: 17% or 329,577 gallons



Total Emissions Reduced (ROG, NOx, PM10, CO): 19.7 tons

Auto Travel Time Savings: 20% or 156,300 hours



Overall Project Benefit-cost Ratio = 90:1

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